The dark side of social media: Associations between the Dark Triad of personality, self-disclosure online and selfie-related behaviours

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Abstract

The present study investigated the relations between the Dark Triad personality traits (i.e., Machiavellianism, narcissism, and psychopathy), distinct dimensions of self-disclosure online (i.e., honesty, amount, positive valence, and intent) and selfie related-behaviours (taking, posting, and editing selfies). The results indicated, that all three Dark Triad components were positively correlated with posting and editing selfies on social networking sites (SNSs). However, multiple regression analysis demonstrated that only narcissism predicted selfie-related behaviours. Narcissism and Machiavellianism were positively related to the amount of personal information disclosed online and the tendency to intentionally self-disclose in a computer-mediated communication (CMC). Moreover, we found no significant correlations between the perceived controllability of Internet communication and two types of self-promotion in the Internet (self-disclosure online and selfie-related behaviours). Our findings demonstrate the importance of analysing the 'dark' personality traits in the context of self-promotional behaviours in social media.

Key words: Dark Triad, Machiavellianism, narcissism, psychopathy, self-disclosure online, perceived controllability, selfies, social media.

Introduction

The Dark Triad of personality includes three separate, but moderately inter-correlated and empirically overlapping socially malevolent, antagonistic personality traits: Machiavellianism, narcissism and psychopathy. These personality variables are measured at the subclinical level and share a common, 'dark' core of disagreeableness, low honesty-humility, callousness (lack of empathy), aggressiveness and interpersonal manipulation (Paulhus, & Williams, 2002; Furnham, Richards, & Paulhus, 2013; Jones, & Figuredo, 2013; Book, Visser, & Volk, 2015). From an evolutionary perspective the Dark Triad is described as representing a selfish, exploitative, agentic, short-term social style (Jonason, et

al., 2009; Jonason, Li, & Teicher, 2010), which reflects a fast life history strategy (Jonason, Koenig, & Tost, 2010; McDonald, Donnellan, & Navarrete, 2012).

All these three higher-order personality constructs are conceptually distinguishable from one another (Furnham, Richards, & Paulhus, 2013; Paulhus, & Williams, 2002). Machiavellianism reflects cold, strategic manipulation and deception in interpersonal interactions, selfishness, instrumentality, cynicism and pragmatic morality (Christie, & Geis, 1970; Jones, & Paulhus, 2009). Narcissism is characterized by grandiose and inflated self-concept, self-importance, sense of entitlement and the expectation of special treatment, exhibitionism along with attention and admiration seeking (Campbell, & Miller,2011; Morf, & Rhodewalt, 2001; Raskin, & Terry, 1988). This personality trait represents the 'brighter' side of the Dark Triad, whereas Machiavellianism and psychopathy are related to stronger malevolence and are sometimes described as "Malicious Two" (Rauthmann, & Kolar, 2012). Finally, psychopathy refers to lack of empathy and anxiety, interpersonal manipulation, antisocial behaviour, high impulsivity and thrill-seeking (Hare, & Neumann, 2008; Paulhus, & Williams, 2002).

Despite the growing popularity of the Dark Triad concept in the scientific literature (Jonason, et al., 2012), there is only limited research on the functioning of Machiavellian, narcissistic and psychopathic individuals in online interactions, particularly in the context of self-presentation behaviours, including posting and editing selfies along with an online self-disclosure. In contrast, previous empirical findings rather concentrated on the relation between these three antisocial personalities and different forms of aggressive behaviours on the Internet, such as using swear words and words associated with anger on Twitter (Sumner, et al., 2012), cybertrolling (Buckels, Trapnell, & Paulhus, 2014) and cyberbullying (Gibb, & Devereux, 2014; Goodboy, & Martin, 2015). The positive association between the Dark Triad traits and cyber-aggression was observed not only among adults, but also in an adolescent population, including boys and girls aged between 14 and 18 years old (Pabian, Backer, & Vandebosch, 2015). These results demonstrate the importance of investigating the relation between the Dark Triad and online behaviours among adolescents.

However, previous findings show that the Dark Triad manifestations in the computer-mediated communication (CMC) may also include different types of self-promotional behaviours on the social networking sites (SNSs). From an evolutionary perspective, the social media may help those high on the Dark Triad to employ a self-centered, cheater strategies, which enables them to achieve social goals such as attracting mates or expressing social dominance. Thus, highly Machiavellian, psychopathic or narcissistic individuals may use various self-presentation tactics in the social media environment to gain popularity and social capital in order to effectively manipulate and exploit others (Fox, & Rooney, 2015). Existing literature on the Dark Triad confirms that these personality traits represent three separate strategies in interpersonal relations, which facilitate the manipulation and exploitation of others. For example, the study by John Rauthmann (2011) showed that Machiavellianism is related to protective, narcissism to acquisitive, and psychopathy to both forms of self-

monitoring in offline, face-to-face (FtF) social interactions. Moreover, past findings indicate that Machiavellianism and narcissism are positively related to self-promotion on Facebook (e.g., Buffardi, & Campbell, 2008; Mehdizadeh, 2011; Rosenberg, & Egbert, 2011). According to those evidences, people with high levels of Machiavellianism and narcissism engage in self-promotional behaviours online due to their egoistic, self-serving motives. However, there is only limited empirical data, concentrating on the individual differences in using various self-presentation tactics on SNSs by all three Dark Triad personalities (cf. Fox, & Rooney, 2015).

In line with existing literature, people engage in different strategic, self-promotional acts online, using social media (Bareket-Bojmel, Moran, & Shahar, 2016). Ashwini Nadkarni and Stefan Hofmann (2012) identified the need of self-presentation as one of two basic motives of using Facebook. Previous findings suggest that one of the forms of the deliberate self-presentation in the CMC may be regulating self-disclosure online (Gibbs, Ellison, & Heino, 2006; Toma, Hancock, & Ellison, 2008). According to Erving Goffman's (1959) dramaturgical approach to self-presentation, individuals who use self-disclosure online as a method of impression management conceal and reveal information about the self so as to present themselves in a desirable manner (Wang, & Stefanone, 2013).

The phenomenon of self-disclosure online is defined as revealing personal information via Internet to others (Joinson, & Paine, 2007) and widely described in the cyberpsychology as the basis of creating close relations and effective communication on SNSs (e.g., Ledbetter, et al., 2011; Park, Jin, & Jin, 2011). To date, most researchers have focused on the differences between online and offline self-disclosure, showing higher levels of self-disclosure in the CMC than in the FtF social interactions due to a sense of anonymity and reduced fear of social rejection in the Internet (Attrill, 2012). Furthermore, given the multi-dimensionality of self-disclosure, researchers distinguished its different forms. For instance, investigating online dating environment, Jennifer Gibbs, Nicole Ellison and Rebecca Heino (2006) identified four dimensions of self-disclosure via the Internet: the honesty of self-disclosure, the amount of self-disclosed information, the positive or negative valence (which reflects the positivity or negativity of the information revealed about oneself) and the intention (which refers to the extent to which the information about oneself is disclosed intentionally and deliberately). This classification, based on the traditional interpersonal theories rooted in the social psychology (Wheeless, 1978; Wheeless, & Grotz, 1976), can be used to explore identity presentation in the social context across different age groups (Gibbs, et al., 2006).

Previous research show that the levels of self-disclosure in the online social media environment are associated with different personality traits: positively with extraversion, agreeableness and neuroticism, and negatively with conscientiousness and shyness (Brunet, & Schmidt, 2007; Chen, & Marcus, 2012; Christofides, Muise, & Desmarais, 2009; Gosling, et al., 2011; Seidman, 2013). However, there is no empirical research linking all personality traits constituting the Dark Triad and different facets of self-disclosure online in the existing

scientific literature. Loren Abell and Gayle Brewer (2014) reported that Machiavellianism is positively related to strategic, dishonest self-disclosure online in the social media environment. In addition, Machiavellianism predicted not only the honesty/accuracy of self-disclosure offline in men and women, but also the intent to self-disclose and the depth of revealed information in women (Brewer, Abell, & Lyons, 2014). These results correspond with the notion that Machiavellian women may treat self-disclosure in FtF interactions as an interpersonal manipulation strategy employed to control others (O'Connor, & Simms, 1990) and suggest that those high in Machiavellianism are less honest and more calculating when they self-disclose online. Additionally, their self-disclosures online may be not only more strategic, deliberate, intentional and less frequent, but also more positive. In the attempt to better understand the relation between impression management and personality traits among Facebook users, Jenny Rosenberg and Nichole Egbert (2011) found, that Machiavellians use various self-presentation tactics online (including self-promotion) to present themselves in favorable ways. These results suggest that high Machs might tend to present themselves in more flattering light to gain social capital as a strategy to exploit others for their personal benefit.

In contrast, those high in psychopathy and narcissism, due to their high impulsivity (Jones, & Paulhus, 2011) along with the emotional coldness and the tendency to self-promote (Paulhus, & Williams, 2002), may be less able to strategically shape their image on SNSs by intentionally controlling the amount of their self-disclosures. Danilo Garcia and Sverker Sikström (2014) found that psychopaths and narcissists – but not Machiavellians - engage in impulsive, undeliberate self-disclosure in online communication, including frequent status updates on Facebook. Several other studies on self-disclosure online confirmed the narcissists' tendency to excessive, positive self-promotion online (e.g., Aviram, & Amichai-Hamburger, 2005; Carpenter, 2012; Mehdizadeh, 2010). Moreover, narcissism predicted revealing more personal information on SNSs (Liu, Ang, & Lwin, 2013; Wang, & Stefanone, 2013) and creating more self-generated content on SNSs in the form of Facebook profile photos, which may help narcissistic individuals to regulate their inflated self-views (Ong, et al., 2011). These results suggest that self-disclosure on SNSs can be used by people high in the Dark Triad traits to manipulate their self-image and social interactions with others. From the evolutionary perspective, such employing online communication environment for self-promotion purposes represents cheater strategy online (Fox, & Rooney, 2015).

Selfie-related behaviours (i.e., taking self-portraits, editing and posting them on SNSs) are also described in the scientific literature as a form of strategic self-presentation online and evaluation of self among adolescents and young adults (Chua, & Chang, 2016; Lee, Ahn, & Kim, 2014). The frequency of these acts of self-promotion online are analyzed in relation to different social and psychological characteristics, especially age (e.g., Dhir, et al., 2016) and personality traits. Since Lin Qiu et al. (2015) demonstrated on the Big Five model that personality may be expressed in presenting the self-portraits in social media, the research-

ers have indicated different personality predictors of selfie-related behaviour, for instance: histrionic personality (Sorokowski, et al., 2016), social exhibitionism and extraversion (Sorokowska, et al., 2016). Narcissism (and its facets) has been also well-documented as related to self-promotional, selfie-related behaviours on SNSs (Kim, et al., 2016; Moon, et al., 2016; Sorokowski, et al., 2015; Weiser, 2015). Yongjun Sung et al. (2016) have reported that sharing posts in the form of own self-portrait pictures reflects three narcissistic motives: seeking attention, communicating and entertaining. However, there is only one research concerning the links between all three Dark Triad traits and selfies, defined as a self-portrait photographs of oneself (Sorokowski, et al., 2015). Referring to the evolutionary perspective, Jesse Fox and Margaret Rooney (2015) suggest that excessive presenting and editing photos of oneself online may enable people high in the Dark Triad traits to successfully cheat in social interactions and benefit from others. The authors proved that all three Dark Triad traits are positively associated with higher selfie-taking and selfie-editing frequency among men.

In the present study we have not only tested the relations between the Dark Triad and self-promotional behaviours (including self-disclosure online and selfie-related behaviours), but also applied the elements of the "Internet-Attribute-Perception" model (Schouten, Valkenburg, & Peter, 2007). According to this theory, the perceived controllability of Internet communication can stimulate self-presentation and self-disclosure online among adolescents (Valkenburg, & Peter, 2011). These characteristics of online communication environment reflects individuals' perceptions on how easily they can "control if, when, how, how much and what they communicate to others on the Internet" (Peter, & Valkenburg, 2006, p. 214) and are described as a predictor of the frequency of online communication behaviours (Valkenburg, & Peter, 2011). Previous empirical findings revealed that perceived control influences the use of SNSs among adolescents (Baker, & White, 2010; Davis, 2012). Additionally, the recent study demonstrated that the perceived behavioural control of CMC are related to the amount of selfie-posted indirectly, through the intention to post selfies on SNSs (Kim, et al., 2016).

To date there are only a few empirical research exploring the role of 'dark' personality predictors of social media use in Poland and almost all of them focus only on narcissism (e.g., Błachnio, Przepiórka, & Rudnicka, 2016; Sorokowski, et al., 2015). In contrast, the main aim of the present study was to investigate the relationships between the Dark Triad personality traits (Machiavellianism, narcissism and psychopathy), selfie-related behaviours (selfie-taking frequency, selfie-posting frequency and selfie-editing frequency) and self-disclosure online (honesty, amount, positive valence, intent) among adolescents and young adults in the Polish population. Moreover, we analysed the relations between the perceived controllability of Internet communication and two forms of self-promotional behaviours on SNSs (self-disclosure online and selfie-related behaviours).

We expected to replicate the results reported by Fox and Rooney (2015), who proposed to investigate the self-promotional behaviours among those

high in the Dark Triad traits from the evolutionary perspective. Their study revealed the positive relations between the Dark Triad and the frequency of selfie-posting and selfie-editing. In line with this research, we expected similar patterns of correlation in the present study. In addition to this, we use the evolutionary framework to explore the relations between the Dark Triad traits and four dimensions of self-disclosure online. We also expected that perceived behavioural control would be positively associated with four dimensions of self-disclosure online and selfie-related behaviours.

Given previous findings and existing theoretical framework, the following hypotheses have been formulated:

- Hypothesis 1a: Machiavellianism would be positively associated to the conscientious intent and (positive) valence of self-disclosure online, and negatively to the honesty and amount of self-disclosure online.
- Hypothesis 1b: Psychopathy would be positively related to the amount, (positive) valence and honesty of self-disclosure and negatively to the intent to self-disclosure online.
- Hypothesis 1c: Narcissism would be positively related to the amount, (positive) valence and honesty of self-disclosure and negatively to the intent to self-disclosure online.
- Hypothesis 2: The Dark Triad traits (Machiavellianism, narcissism, psychopathy) would be positively related to selfie-related behaviours (selfie-taking frequency, selfie-posting frequency and selfie-editing frequency).
- Hypothesis 3: Perceived controllability of Internet communication would be positively related to the amount and intent of self-disclosure online and selfie-related behaviours (selfie-taking frequency, selfie-posting frequency and selfie-editing frequency).

To test our hypothesis we conducted the correlational study on the group of adolescents and young adults. The data were collected in the area of the southern Poland. The participants fulfilled the set of self-reported questionnaires, which were individually distributed among them. The detailed description of materials and methods is placed in the next section of the article.

Methods

Participants and procedure. The sample consisted of 146 students (102 women and 44 men) recruited from various secondary schools and university faculties in Poland. Participants' age ranged from 16 to 25 years (M = 18.69; SD = 2.35). Most participants reported spending more than 2 hours daily communicating with others using Internet (56.2%). Respondents also declared that they frequently use social networking sites (SNSs). Most of them reported spending more than 2 hours daily on SNSs (60.3%). Only a few participants reported spending less than 30 minutes daily on SNSs (9.6%).

The study was anonymous and took approximately 10 minutes to complete. The participation in the study was voluntary. Before starting the survey we obtained permission from school principals and teachers to recruit participants among students. Then the students were invited to participate in the study concerning "personality and Internet behaviour" and asked to complete traditional paper and pencil measures. Those who gave consent to participate in the study completed the questions regarding sociodemographics, followed by a series of self-report questionnaires that assess self-disclosure online, selfie-related behaviour and personality variables (the Dark Triad traits). The subjects were not compensated for the participation in the study.

Dark Triad. The Dark Triad traits were measured with a Polish version (Czarna, et al., 2016) of the Dirty Dozen Scale (DTDD) (Jonason, & Webster, 2010) – "Parszywa Dwunastka" (DTDD-P). The Dirty Dozen is a brief 12-item measure of narcissism (e.g., "I tend to want others to admire me"), psychopathy (e.g., "I tend to be unconcerned with the morality of my actions") and Machiavellianism (e.g., "I tend to manipulate others to get my way"). The scale is widely used in non-clinical populations as an alternative to measure the Dark Triad via three time-consuming, full-length questionnaires (e.g., Egan, Chan, & Shorter, 2014; Jonason, & Luévano, 2013; Rauthmann, & Kolar, 2012). Responses are scored on a 5-point Likert scale (1 - strongly disagree; 5 - strongly agree). All three, four-item subscales of the Dirty Dozen were internally consistent: narcissism (α =.86), psychopathy (α =.74), Machiavellianism (α = 0.84).

Self-disclosure online. In order to measure self-disclosure online, participants were given the Self-Disclosure Scale (GSD; Wheeless, 1978; Wheeless, & Grotz, 1976) modified by Gibbs et al. (2006) to refer to online interactions. The scale measures individual differences in self-disclosure in the CMC settings. Gibbs et al. (2006) reported accepted psychometric properties for all subscales of the instrument. Originally, participants were asked to rate their level of agreement (1 - strongly disagree; 5 - strongly agree) on 16 statements designed to assess four aspects of self-disclosure online: honesty (e.g., "I am always honest in my self-disclosures to those I meet online"), amount (e.g., "I often discuss my feelings about myself with those I meet online"), positive valence (e.g., "I usually disclose only positive things about myself with those I meet online"), conscious intent (e.g., "When I reveal my feelings about myself to those I meet online, I consciously intend to do so"). In the present study two scales (amount and positive valence) demonstrated poor internal consistency (α<.70). As a result, we conducted exploratory factor analysis using Varimax rotation, which proved four-factor solution. At the next step we eliminated all items with factor loadings less than.50 or cross loadings greater than.30. Finally, the scale used in the present study consisted of 9 statements and proved to be reliable. The subscales demonstrated satisfactory reliabilities: honesty (α =.79), amount (α =.78) and intent (α =.83). The last dimension of self-disclosure online - positive valence were measured using one item.

Selfie-related behaviours. The selfie-related behaviours was measured using three items based on the instruments used in previous studies to assess

the frequency of taking selfies as well as posting and editing them on SNSs (Fox, & Rooney, 2015; Halpern, Valenzuela, & Katz, 2016). The statements used in the present study were: (1) "How often during the last year have you taken yourself a selfie (a self-portrait in order to show it others)," (2) "How often during the last year have you posted a selfie on the SNSs (e.g., on Facebook, Instagram, Twitter, Tumblr, Pinterest, Our Class/Nasza Klasa)," (3) "How often during the last year have you edited a selfie (cut the picture, used photographic filters, Photoshop or other applications to edit the picture)." The participants assessed the frequency of selfie-related behaviours during the indicated period on a 7-point scale (1 – never; 7 – every day).

Perceived controllability of Internet communication. To assess perceived controllability of Internet communication we used 2 items created by Peter and Valkenburg (2006) to measure perceived characteristics of CMC among adolescents. The items were: "On the Internet, I have more time than in a face-to-face encounter to think about what I want to say" and "On the Internet, I have more time than in a face-to-face encounter to think of how I will say something". The participants rated these two statements on a 5-point Likert scale ranging from 1 (very important) to 5 (not at all important). The items were inversely coded. The internal consistency for the scale was adequate for the present study (α =.81).

Results

Descriptive statistics and Pearson correlations for the Dark Triad and other study variables can be viewed in Table 1. Not surprisingly, all Dark Triad components, measured on the Polish version of the Dirty Dozen Scale, were moderately to high correlated, supporting the conviction that they share a common core (cf. Paulhus, & Williams, 2002).

Correlational analysis was conducted to test the Hypotheses 1a and 1b, concerning the relations between the Dark Triad traits and the levels of self-disclosure online. Testing Hypothesis 1a, we found statistically significant correlations between Machiavellianism and two dimensions of self-disclosure online (amount and intent), but in the opposite direction from that predicted. Machiavellianism was positively related to the amount of personal and intimate information revealed online (r=.18, p<.05) and negatively to the conscious intent to self-disclose via Internet (-.16, p<.05), but the relations were weak. Additionally, Hypothesis 1a was not confirmed, as the relationships between Machiavellianism and the two remaining types of self-disclosure (honesty and valence) were nonsignificant. These results are contrary to the previous findings, according to which Machiavellians engage in more strategic, dishonest, deceptive self-promotion acts in CMC (Abell, & Brewer, 2014; Rosenberg, & Egbert, 2011).

Hypothesis 1b was not confirmed, as subclinical psychopathy was not significantly correlated with any dimension of online self-disclosure. Our findings are inconsistent with existing empirical evidence, showing that such socially malevolent personality traits as psychopathy and narcissism might be expressed

in intense self-promotion online, such as frequent status updates on Facebook (Garcia, & Sikström, 2014), but may reflect impulsive nature of subclinical psychopaths (Hare, & Neumann, 2008), who could have problems with controlling the levels of personal information revealed online. However, Hypothesis 1b was partially supported, as narcissism was positively related to the amount of information disclosed in the CMC (r=.23, p<.01) and negatively with the conscious intent to reveal personal information online (r=-.18, p<.05). In line with the results of previous research (Liu, Ang, & Lwin, 2013; Wang, & Stefanone, 2013), people high in narcissism disclose more personal information in CMC and make more intentional disclosures to other users of the online communication environment. Our findings support current empirical evidence, showing that more narcissistic individuals engage in greater online self-presentation by creating different types of self-generated content (Ong, et al., 2011).

Hypothesis 2 predicted that all three socially aversive Dark Triad personality traits would be positively associated with the frequency of taking, posting and editing selfies. As predicted, narcissism was positively correlated with the frequency of taking (r=.30, p<.01), posting (r=.33, p<.01) and editing (r=.32, p<.01) selfies, while Machiavellianism and psychopathy, in contrast, were positively associated only with posting (r=.23, p<.05; r=.18, p<.05) and editing (r=.22, p<.05; r=.18, p<.05) self-portrait photographs on SNSs. The strongest associations were observed in narcissism, which can reflect narcissistic tendency to attention-seeking through self-presentation online (Ong, et al., 2011; Lee, Ahn, & Kim, 2014). In contrast, psychopathy displayed the lowest correlation with the frequency of posting and editing selfies on SNSs. These findings suggest that, contrary to exhibitionistic narcissists and highly self-controlling Machiavellians, impulsive and irresponsible psychopaths are less able to strategic self-promotion on SNS using selfie. The obtained results were consistent with those of Fox and Rooney in the large sample of men (2015), suggesting the cultural universality of the analysed associations and confirming the evolutionary perspective in studying the selfie-related behaviours among those high in the Dark Triad traits.

Contrary to our expectations, Hypothesis 4 was not confirmed. We found no significant correlation between perceived controllability of Internet communication and selfie-related behaviours as well as self-disclosure online. Such results are contradictory with the theoretical framework of the "Internet-attribute-perception" model, referring to different forms of online communication among adolescents. According to this model, perceived control of Internet communication facilitates self-disclosure online (Schouten, Valkenburg, & Peter, 2007). The obtained results suggest that the utility of the "Internet-attribute-perception" model in the context of self-presentation acts online may be limited. In line with previous research (Baker, & White, 2010; Kim, et al., 2016), the perceived behavioural control of Internet communication may be rather linked directly to behavioural intention to self-promote online.

Table 1.

Correlations between study variables, means and standard deviations.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	M	SD
1. Age	-	.02	-.03	-.23**	-.23**	-.15	.11	-0,10	-.07	.02	-.03	.07	.07	.14	18.69	2.35
2. Time using CMC		-	.61***	.28***	.19*	.26**	.18*	0,12	.18*	.14	.28***	-.06	.10	.07	3.56	1.43
3. Time using SNSs			-	.36***	.23**	.28***	.12	0,09	.17	.19*	.22**	-.01	.02	.06	3.58	1.34
4. Selfie-taking frequency				-	.59***	.61***	.30***	0,15	.16	.14	.10	-.01	.05	.03	3.51	1.73
5. Selfie-posting frequency					-	.53***	.33***	0,18*	.23**	.11	.24**	-.14	.04	.00	2.71	1.39
6. Selfie-editing frequency						-	.32***	0,18*	.22**	.14	.13	-.07	.02	.06	2.90	1.64
7. Narcissism							-	0,45***	.63***	.13	.23**	-.18*	.06	.04	9.33	4.14
8. Psychopathy								-	.70***	-.15	-.02	-.15	.02	.04	8.77	3.77
9. Machiavellianism									-	.05	.18*	-.16*	.06	.11	8.23	4.16
10. Honesty										-	.22**	.23**	.07	.08	12.45	3.97
11. Amount											-	-.22**	.25**	.13	4.61	2.22
12. Intent												-	.16*	.07	7.58	2.26
13. Positive valence													-	.16	2.87	1.06
14. Perceived controllability														-	5.30	2.14

Note: M = mean; SD = standard deviation.

* p <.05.

** p <.01.

*** p <.001.

Because of the common core (the shared variance) among the Dark Triad traits Adrian Furnham, Steven Richards and Delroy Paulhus (2013) recommended to apply not only the correlational analysis, but also the multiple regression models in the studies devoted to these three constructs. To assess the unique contribution of Machiavellianism, narcissism and psychopathy in predicting taking, posting and editing selfies on SNSs, we computed three regression equations. These multiple regression models for the Dark Triad traits predicting selfie-related behaviours are presented in Table 2. Similarly to Fox and Rooney (2015), we entered into the models all significant predictors and control variables (i.e., age and time using SNSs). The results revealed that all three multiple regression models fitted the data well, with narcissism being the only statistically significant personality predictor of selfie related-behaviours. These findings are in line with previous research on the functioning of narcissists in the social media environment (e.g., Sorokowski, et al., 2015; Weiser, 2015), suggesting that this element of the Dark Triad alone can predict the tendency to take, post and edit self-photographs on SNSs.

Table 2.
Multiple regression analysis for the Dark Triad traits, age and time using SNSs predicting selfie-related behaviour.

Variable	B	B(SE)	β	t
Selfie-taking frequency				
Age	-.19	.05	-.25	-3.46**
Time using SNSs	.41	.10	.32	4.31***
Narcissism	.12	.03	.29	3.89***
Selfie-posting frequency				
Age	-.16	.05	-.27	-3.53**
Time using SNSs	.20	.08	.19	2.49*
Narcissism	.13	.03	.38	3.78***
Psychopathy	.01	.04	.02	.21
Machiavellianism	-.03	.04	-.08	-.61
Selfie-editing frequency				
Time using SNSs	.31	.10	.25	3.17**
Narcissism	.11	.04	.28	2.79**
Psychopathy	.02	.05	.05	.42
Machiavellianism	-.01	.05	-.02	-.14

Note: Selfie-taking frequency, $F(3, 140) = 16.08$, $R = .51$, $p < .001$, adjusted $R^2 = .24$. Selfie-posting frequency, $F(5, 138) = 7.68$, $p < .001$, $R = .47$, adjusted $R^2 = .19$. Selfie-editing frequency, $F(4, 141) = 6.82$, $p < .001$, $R = .40$, adjusted $R^2 = .14$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Discussion

The present study aimed to examine the relations between the Dark Triad personality traits (Machiavellianism, narcissism and psychopathy) and two forms of self-presentation in the online communication environment: self-disclosure online and selfie-related behaviours (e. i., taking, posting and editing self-photographs on SNS). Moreover, self-disclosure online and selfie-behaviours were analysed for the first time in the relation to the perceived controllability of Internet communication.

In the present study we found only limited evidence that the Dark Triad personality traits are associated with various dimensions of general self-disclosure online. Our results indicate that people high in narcissism and Machiavellianism disclose more personal information online and their self-disclosures are more intentional. This pattern of associations might reflect "cheater strategies" employed by them to successfully attract and exploit others through online social interactions. Specifically, highly Machiavellian and narcissistic individuals may be more likely than less Machiavellian and narcissistic Internet users to employ SNSs to identify, attract and deceive potential short-term mates (Fox, Rooney, 2015). More intense self-disclosure online may also benefit some Machiavellian women by helping them to control online social audiences (Brewer, Abell, & Lyons, 2014). Similarly, according to Ilan Aviram and Yair Amichai-Hamburger (2005), narcissists may use their self-disclosures online as a way to manipulate their interpersonal interactions to boost subjective omnipotence. In addition, it is possible that presenting higher amount of intentional self-disclosures online reflects to some extent the narcissistic self-regulatory strategies, such as using by them social networking sites to maintain their inflated, positive self-views (Mehdizadeh, 2010; Ong, et al., 2011).

The present study demonstrated the insignificant relations between psychopathy and four facets of self-disclosure online. This may be because self-promotion online requires some level of self-regulation (Mehdizadeh, 2010), whereas impulsive, poor long-term planning and callous psychopaths (Hare, & Neumann, 2008) could have only limited ability to strategically shape and present their positive self-views. Moreover, in the social psychology literature self-disclosure is traditionally described as the transactional process, which allows the individual to develop the intimacy and closeness in the interpersonal relations (Greene, Derlega, & Mathews, 2006). However, empathy deficits characterizing subclinical psychopaths (LeBreton, Binning, & Adorno, 2006) may not only limit their ability to effectively self-disclose online, but also result in the reduced efforts to engage in social relations using online self-disclosures.

In the present study on the group aged 16-25 we replicated the results by Fox and Rooney (2015), showing the positive relations between the Dark Triad traits and selfie-related behaviours among adult men. Our study provides the evidence that Machiavellianism, narcissism and psychopathy are associated with a number of selfies posted and edited on SNSs in younger population, including adolescents and young adults. The obtained results confirmed that

the Dark Triad affects interpersonal relationship development on the Internet in different age groups (Carpenter, 2012; Mehdizadeh, 2010; Ong, et al., 2011). In accordance with the evolutionary view of personality, selfie-related behaviours may serve individuals with high levels of Machiavellianism, narcissism and psychopathy as an element of a short-term, exploitative social strategy used to gain social status, popularity, power and access to potential mates through the Internet interpersonal relations (Jonason, et al., 2009). In addition, these personality traits may manifest in CMC in the form of generating more self-related content (Ong, et al., 2011) due to their antagonistic, egocentric nature (Furnham, et al., 2013).

In line with existing findings, indicating that narcissistic individuals are especially prone to use social media as the self-presentation platform (Buffardi, & Campbell, 2008; Carpenter, 2012; Ong, et al., 2011), in the current study the relations between narcissism and selfie-related behaviours were the highest among all the Dark Triad traits. In addition, our study demonstrated that only narcissists are more likely to take pictures of themselves. In line with previous research, narcissists may engage in more self-portrait photographs taking, posting and editing behaviours for self-presentation purposes: to seek attention, to manipulate their social appearance, to demonstrate their attractiveness to potential mates or to regulate their grandiose self-image (Fox, Rooney, 2015; Sung, et al., 2016). Moreover, the discrepancy between the frequency of selfie-related behaviours among Machiavellians, narcissists and psychopaths seems to prove the notion that the Dark Triad traits may respond in different ways to social contexts (Carre, & Jones, 2016). These differences in online behaviours among the three antisocial personalities may also stem from different motives underlying the online self-presentation strategies linked to the Dark Triad components (Abell, & Brewer, 2014; Garcia, & Sikström, 2014).

On the other hand, the associations between the Dark Triad and other study variables were weak, indicating that different psychological or social variables may interact with these three personality constructs in predicting selfie-related behaviours. Previous findings suggest that the potential moderator may be sex. For example, Piotr Sorokowski, et al. (2015) and Eric Weiser (2015) reported differences in online selfie-posting behaviours among narcissistic men and women. Moreover, recent study confirmed that sex moderated relation between personality variables and posting different types of selfie: own selfies, selfies with a partner and group selfies (Sorokowska, et al., 2016; Sorokowski, et al., 2016).

Our study revealed that perceived controllability of Internet communication was not related to self-disclosure online and selfie-related behaviours. These results may indicate that perceived controllability is associated with sharing and publishing selfies in digital environments only indirectly, through behavioural intention to post selfies, as assumes the theoretical model of Eunice Kim et al. (2016), based on the Theory of Planned Behaviour, rather than directly, as assumed the "Internet-attribute-perception" model (Peter, & Valkenburg, 2006; Schouten, et al., 2007). Kim et al. (2016) suggest that individuals' perceived

behavioural control in relation to posting selfies is an important determinant of his or her behavioural intention to post selfies. This interpretation may refer not only to the phenomenon of selfies, but also to different types of online behaviours, including self-disclosure online, described as a form of self-presentation or impression management in CMC (Ellison, Heino, & Gibbs, 2006).

The current study had several limitations. First, it had a relatively small sample size and imbalanced sex ratio (69.86% of women). As a result this study should be treated as a preliminary attempt to verify the hypotheses concerning relations between the Dark Triad and online self-presentation behaviours. Second, we used the self-reported questionnaires, which were distributed to the participants in the traditional, paper-and-pencil format. However, previous findings indicate, that behavioural self-disclosure online can be successfully measured in the web-based studies through experimental manipulations of privacy (Joinson, et al., 2008). Moreover, the frequency of posting and sharing selfies may be assessed using observational data (e.g., Sorokowski, et al., 2015; Qiu, et al., 2015). Third, the self-reported questionnaire of self-disclosure online employed in this study refers to the general tendency to reveal personal information in various online communication environments, not only on SNSs. Additionally, these measurements suffer from low internal consistency. Finally, we used the concise measure of the Dark Triad, that does not emphasize all differences between Machiavellianism, narcissism and psychopathy, comparing to the full-length scales (Maples, Lamkin, & Miller, 2014).

There are several potential directions for future research. Firstly, the study employing three separate Dark Triad measures is needed. As psychopathy and narcissism are described as complex, multidimensional, heterogeneous constructs (Maples, et al., 2014), using well-established, full-length questionnaires would allow carrying out more detailed, facet-level analysis. It may be also useful to include in the research plan grandiose and vulnerable narcissism (Cain, Pincus, & Ansell, 2008) or other 'dark' personalities, including everyday sadism, which (along with Machiavellianism, narcissism and psychopathy) constitutes the "Dark Tetrad" of personality (Buckels, Jones, & Paulhus, 2013). These personality traits may be associated with different aspects of selfie-related behaviours and self-disclosure online. Given the preliminary nature of the current study, our results should be replicated when using alternative operationalizations of self-disclosure online. Moreover, additional information would provide the analysis based on the sample consisting of people from different age groups, not only adolescents and young adults. It is also worth noting that the recent study of Döring et al. (2016) demonstrated the existence of gender stereotyping in selfies. Therefore, including in the research plan psychological gender differences among those who share selfies online could bring interesting results.

To conclude, the present study investigated the relations between the Dark Triad of personality (Machiavellianism, narcissism and psychopathy) and two forms of self-promotion online (self-disclosure online and selfie-related behaviours). The study revealed positive relations between Machiavellianism

and narcissism, and two aspects of self-disclosure online: amount and intent. Contrary to our expectations, we found no significant correlations between psychopathy and four facets of self-disclosure online. In general, our predictions, regarding the positive associations between the Dark Triad personality traits and the frequency of selfie-related behaviours, were supported. Machiavellianism, narcissism and psychopathy demonstrated positive associations with the number of selfies posted and edited on SNSs. Moreover, narcissism was positively related to the tendency to take selfies. The multiple regression analysis demonstrated that narcissism was the only significant predictor of taking, posting and editing selfies among all three Dark Triad traits. However, perceived controllability of Internet communication was not related to self-disclosure online and selfie-related behaviours.

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